620.7
The3

DRILLER

"T" Stands for Tennessee . . .

And the Hembree Drilling Co. of Chattanooga stands for water producers, according to the sign on the truck. When their 22-W was snapped on this job, the derrick was only partially extended and no braces were used because the job required only a light tool string.

THE JOHN CRERAR
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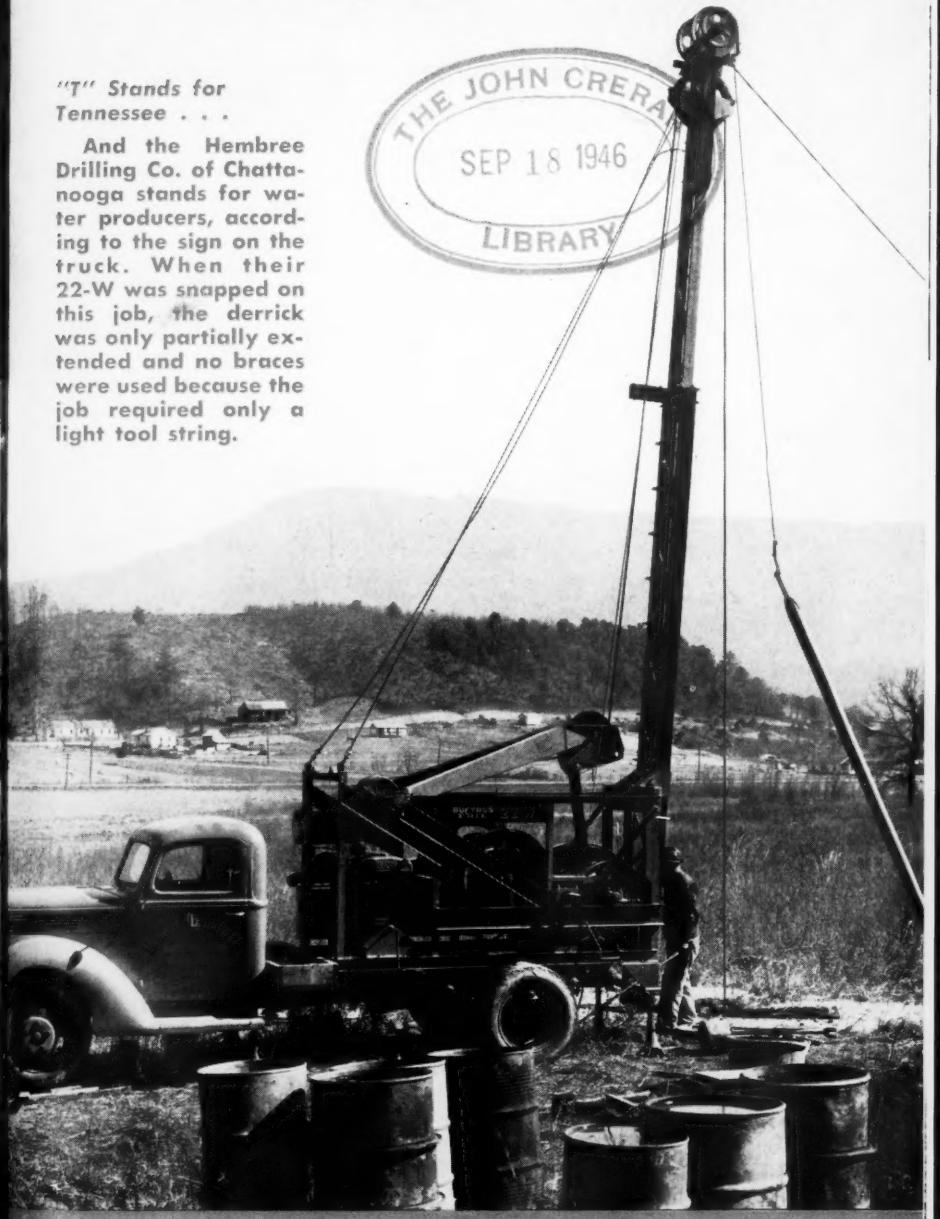

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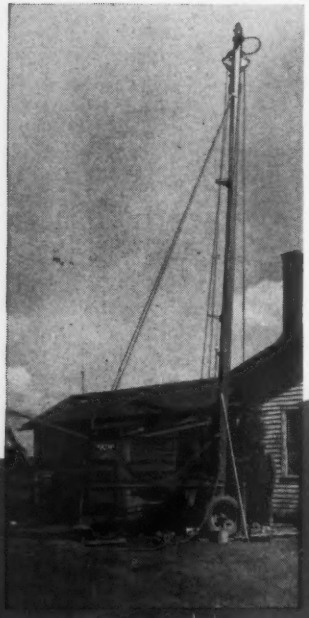
VOLUME 20 SEPTEMBER, 1946 NUMBER 9

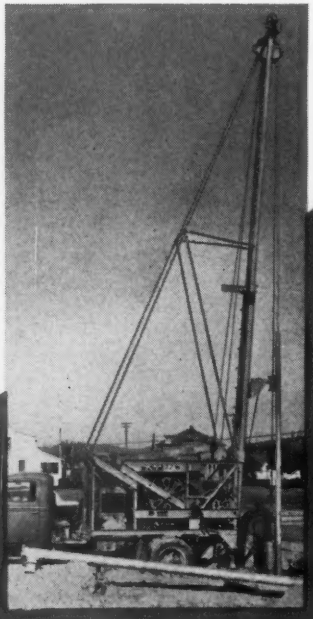
MODERN DRILLS are Well Salesme

Well customers prefer the contractor whose equipment is equal to its job. That's why it's so important to modernize to make the most of the many well markets that are now re-opening in full swing — farms, suburban homes, industries, cities, business places, irrigation and reclamation projects. And when it comes to modern, hard-hitting water well drills, Bucyrus-Eries continue to set the pace. All-steel, mobile, thoroughly dependable, they out-sell because they out-drill!



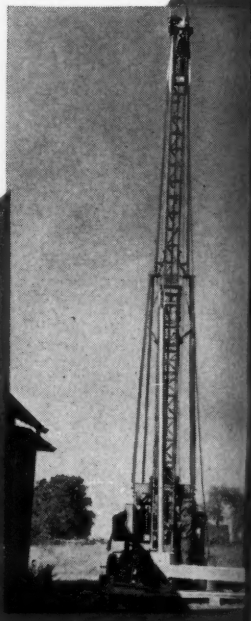
21-W

Swings 1000 lbs. of tools. Drills 4" to 8" holes. Maximum depth (4") 500 ft.



22-W

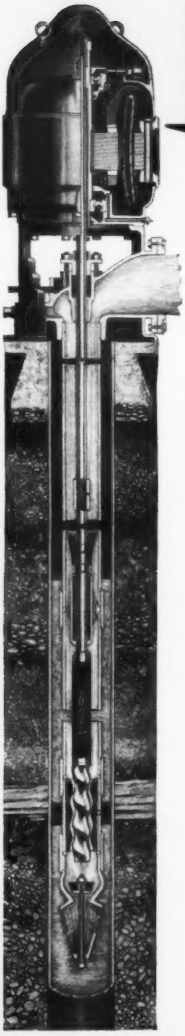
Swings 1500 lbs. of tools. Drills 4" to 10" holes. Maximum depth (4") 1000 ft.



24-L

Swings up to 3000 lb tools. Drills holes up to dia. Maximum depth ishing 4" or 5") 150

SO. MILWAUKEE **BUCYRUS ERIE** WISCONS



SELF-PRIMING
NO OIL USED
UNDERGROUND

HERE'S HOW
"Squeezing Water Upward"
SQUEEZES UPKEEP *DOWN*

PEERLESS
HI-LIFT PUMPS

(Reg. U. S. Pat. Off.)

For low-cost, limited water supply demands of multiple industrial uses.

CAPACITIES: 600 to 3300 Gals. per hour FOR WELLS AS SMALL AS 4" INSIDE DIAMETER

Peerless HI-LIFT is the pump that gives magic wings to water lift, with an ingenious pumping element.

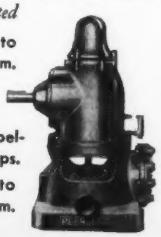
Employing simplicity to the best possible advantage, Peerless has replaced high shaft speed, vibration, and high operating cost, found in most conventional type pumps, with a slow, smooth continuous positive pumping action that literally "squeezes" the water upward.

The only moving part in the pumping element consists of a hard, heat-treated, chrome-plated stainless steel rotor, helically contoured and revolving within a similarly shaped cutless rubber stator. Both of these units are highly resistant to abrasive action.

Buy the pump that "squeezes" water upward and squeezes upkeep down. Investigate today the many possibilities offered you with a Peerless Hi-Lift Pump.

PATENTS: Manufactured under R. Moineau patents, U.S. 1892217, 2028-407 and Re-issue 21374. Canadian Patent 352574. By Exclusive License to Robbins and Myers, Inc. Peerless U.S. Patents 2208937, 2338937 & 2346426. Other Pats. pend.

PEERLESS TURBINE PUMPS
Gearturbo (Right Angle Gear Drive)
Illustrated



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Oil or Water lubrication.
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PEERLESS PUMP

PEERLESS PUMP DIVISION
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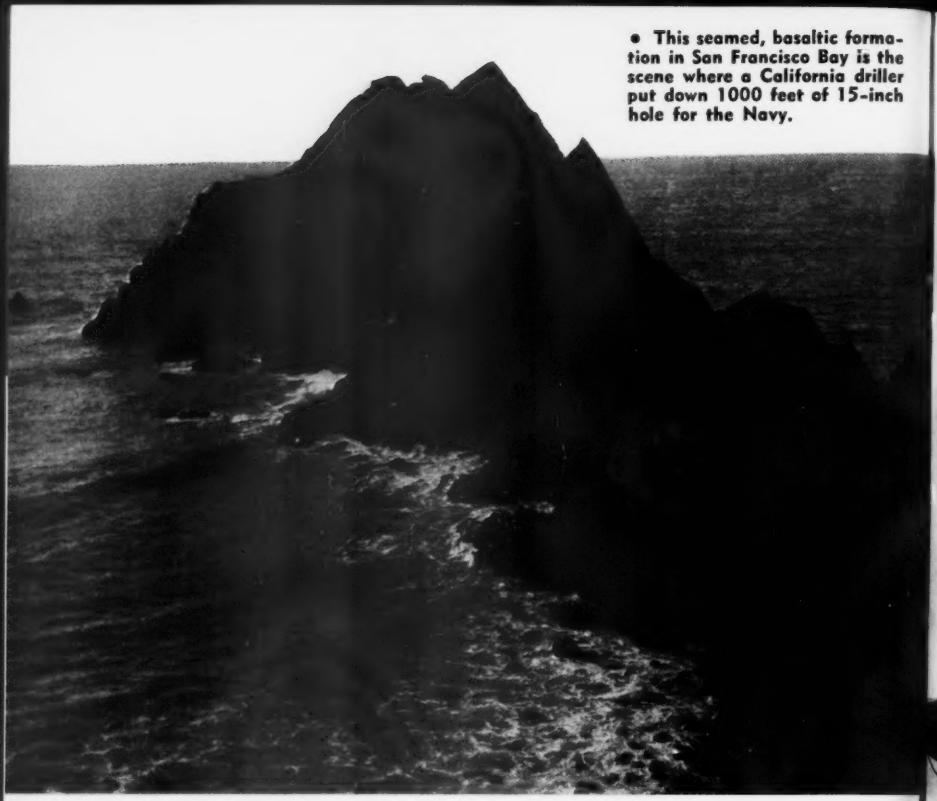


• This seamed, basaltic formation in San Francisco Bay is the scene where a California driller put down 1000 feet of 15-inch hole for the Navy.

Golden Gate Driller—
Water Well Wizard

By ROBERT J. GREEN

A FEW miles out of San Francisco on the peninsula at Daly City, California, a water well driller has located since 1934. John N. Pitcher's wells have served many people in many ways since that time. He has come to be accepted as one of the best well drillers of that territory by creating in the minds of his past and prospective customers, a series of good impressions.

"Good equipment is the best investment the drilling contractor can make," Pitcher said. "My new machines and rapid work have sold more prospective wells than all other forms of references or advertising."

Business which Pitcher tactfully turned away during the war is now beating a path to his door at 170 Moltke Street, Daly City. During the war, Pitcher had two drills taken by the government under recapture clauses, and he kept the rest busy in the San Francisco Bay area for the U. S. Navy making explorations

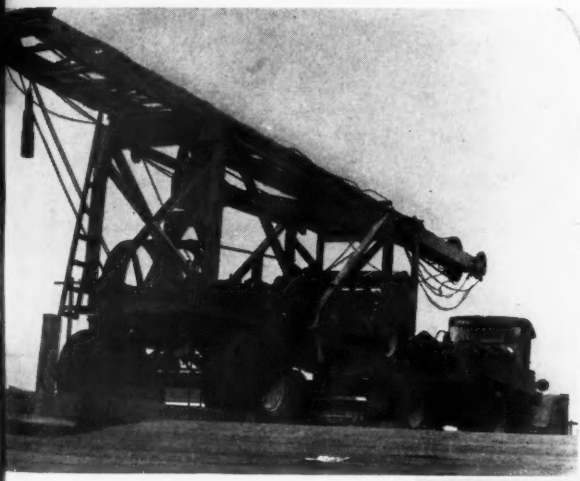
"On land or sea or foam" can aptly be applied to successful John N. Pitcher, San Francisco area well driller, who mounted his rigs on barges and despite the heavy swells and rough water of the bay put down 9000 linear feet of six-inch hole in five weeks.

and test borings for the drydocks, breakwaters and dredging which was done by the Navy.

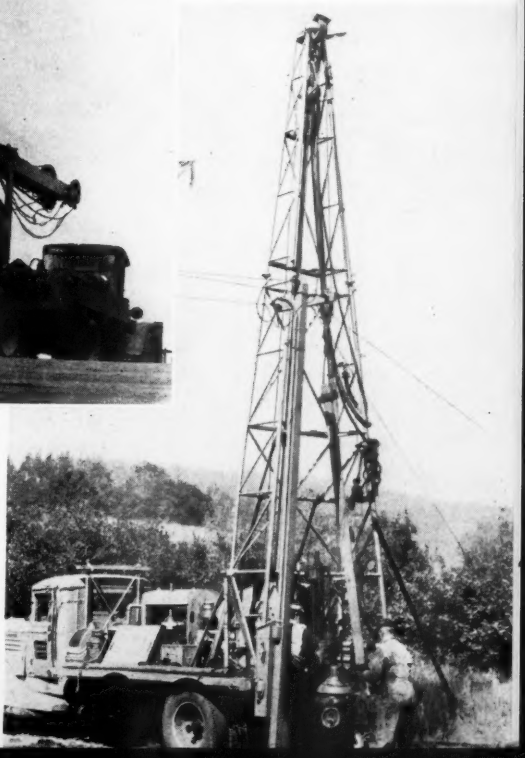
The majority of wells Pitcher drills are water wells for golf courses, truck gardens, cemeteries and industrial plants in the San Francisco manufacturing district. These wells ordinarily go down to an average depth of something like 500 feet, with a diameter of from 12 to 16 inches. They produce as high as 3000 gpm. in the agricultural district near King City, and in the fine sand near Daly City and the Peninsula, output drops to about 600 gpm. due to a low factor of percolation where water must remain clear.

Over a period of 12 years, Pitcher has gathered a most efficient drilling organization behind him, and he operates a number of rigs. He has three Bucyrus-Erie drills: a 33-W, a 22-T and a 24-L. He owns a Failing portable rotary drill mounted on a truck, and he also has a custom built rig somewhat heavier than the 24-L Bucyrus-Erie which was built to his specifications by a shop in San Francisco. It has International UD-9 diesel power, Bucyrus-Erie crown sheave and shock absorbers from a 29-T blast hole drill, and a 40-foot clear derrick which can be raised by power from the diesel engine.

This impressive list of equipment,



• (Left) A rare picture of Pitcher's custom-built drill—it's not drilling at this moment.



• Mud and sand are being removed from the bottom of a well near San Francisco in this shot of the Californian's Failing rotary rig on a repair job.

• "Will I be able to get some more?" is probably the thought running through Pitcher's mind as he stands beside a pile of casing and screens which will go into a well for a cemetery near Daly City.

scattered around central California for a radius of 250 miles from San Francisco, is its own advertisement. Just a few days ago a customer whom Pitcher had never heard of called his telephone number to say, "Pitcher, you have some good looking well drilling equipment."

Pitcher said, "I think I've got the best, and the best drillers to operate them."

"Good. I've got two 1000-foot holes to drill right away," concluded the customer, and a deal was made.

Jobs Are Challenge

Pitcher puts on a drilling performance to match his machines, and never depends on his reputation. To him, each new job is a challenge for more footage, a straight hole, and a long life well. During the war, when his drills were concentrated at the naval center of Hunter's Point, the public works officers were clamoring for test holes. Pitcher moved in the 22-T and the 24-L Bucyrus-Eries, working two 10-hour shifts on the 22-T and a single shift on the 24-L. The machines punched 6-inch diameter test holes from 140 to 200 feet deep at the rate of one hole per machine per 10-hour shift. The machines were mounted on floating barges. Operating in swells and rough water, they drilled 9000 linear feet of hole in a hectic 5 weeks. When the job was finished, the public works officer admitted much to his surprise that Pitcher's two drills had kept out ahead of the drilled footage shown by two other machines operating on a 24-hour basis.

Pitcher's customers never forget that they are dealing with aggressive

• Pitcher's boys are shown putting down an exploration hole with a Bucyrus-Erie 22-T for the foundation of a new chemical plant near San Francisco.

talent, for Pitcher maintains a very close contact with all his machines. He may limit the future purchase of drills to two, to replace those the government purchased, but he feels that to be successful, a drilling contractor should not have machines working over and above what he can properly supervise. Pitcher has a contract with a labor union in San Francisco, and hires helpers through that agency.

While weekly hours have, in the past, run considerably over 40, Pitcher's plans have developed so that he can see his way clear to working his men and machines a straight 40-hour week.

Has Errand Runner

Currently, Pitcher uses a driller and a helper on each machine, with a roustabout pickup truck driver who runs odd errands, picks up spare parts, and so on. He has a definite theory about the wear of drill bits, and dresses them accordingly. His own welders, working in a small shop, bring drill bits back to gauge with Stoody high carbon welding rod, and then while the build-up is hot and clean, the bits are hard faced with either Studite or tube baurium without increasing the gauge. Tube baurium, which Pitcher has been using for only a short time, wears from 5 to 6 times as long as any other hard facing agent which he has tried. He cautions those who would adopt it to apply the baurium before the high carbon build-up has cooled, or it will chip and fly off in hard drilling.

Drilling is so varied that almost every conceivable type of bit is used so far as its penetrating edge, water course and reaming edge is concerned. Rock varies from a black basalt outcrop to a soft Franciscan shale. Other formations are serpentine, a thick green rock varying in its hardness, and diorite. One of the toughest rocks to drill in Pitcher's region is diabase. One of his drillers refers to it as "suitcase rock," explaining that when a driller tries to drill it, he wants to pick up his suitcase and quit.

• Pitcher busies himself with core recovery equipment shown on table.

Drills Basalt Well

At Angel Island Pitcher was called upon to drill 1000 feet of 15-inch water well through basalt, with planes of cleavage in a ¼:1 slope. The job was done for the Navy, which stipulated that the hole was to go down perfectly plumb. Pitcher solved this problem by using a 7½-inch pilot bit, and a 15-inch reaming bit about 6 feet behind the first drill bit fastened to the pilot stem. The hole this combination bit drilled fit the navy's specifications, and the hole was finished on schedule.

Pitcher moves his drills from one location to another by truck, and is building a trailer of his own to move the crawler-mounted rigs. He regards 40 feet of 12 to 16-inch hole,

(Continued on page 16)

Plastics and Cable Tool Drilling

This article is reprinted by special permission from Drilling Magazine for October, 1945.

By JOHN B. STONE

PLASTICS have been used in more than 2,000 wells for the control of unwanted water or gas. The same materials are also being used to shut off water encountered in cable tool drilled wells, thereby eliminating, in many cases, the running of extra strings of casing. Other remedial work being accomplished with plastics in wells includes the elimination of water produced from intermediate and upper parts of pay zones, controlling caving hole conditions, sealing leaky casing, shutting off perforations in pipe and setting blank liners.

The plastic which is being used for this work is very similar to the plastic used in the fabrication of the many everyday household articles. When placed in a well this material is a true fluid containing no suspended particles to filter out on the sand face. It is an amber colored liquid with a viscosity ranging from 188 to 850 centipoises at 82° F. and has a fluidity comparable to No. 40 S.A.E. motor oil.

The plastic can be made to solidify in various times depending upon the types of plastic, temperature and the quantity of catalyst or hardening agent used. The speed of the chemical reaction which changes the liquid plastic into a hard impervious solid is influenced by temperature as are all chemical reactions. The higher the bottom hole temperature of the well, the more rapidly the plastic solidifies. This solidification can be speeded up as shown in Figure 1 by addition of a catalyst or hardening agent to the plastic.

The chemical reaction which causes this solidification is known as polymerization, condensation or an association of these reactions. This reaction causes the plastic to thicken or increase in viscosity until a solid impervious condition is reached. This change takes place rather uni-

Originally written for the oil field where water encountered in oil wells is walled off, this article on the use of plastics in cable tool drilling should prove interesting to all water well drillers. Plastics are now available which will set in wells with temperatures as low as 70° F. Wells with temperatures below 70° F. are not generally considered good subjects for plastics because at these temperatures the plastic requires a long period of time before becoming hardened.

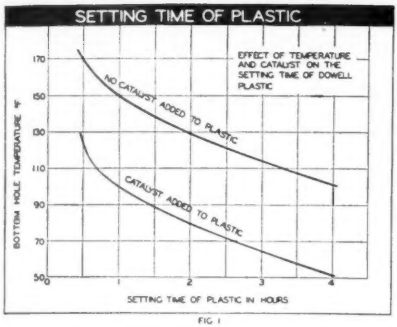


FIG. 1

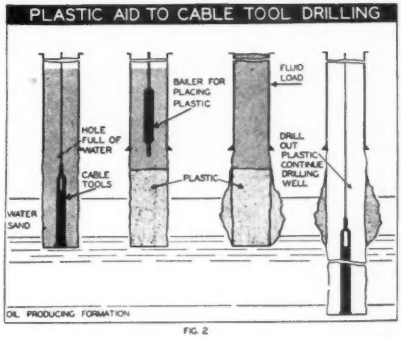


FIG. 2

formly without any sudden change from the liquid to the solid state. After the plastic has hardened, it has a tensile and compressive strength very comparable to that of cement and is extremely stable showing absolutely no signs of deteriorating or dissolving upon long exposure to water, oil or gas.

In order to obtain a desirable setting time of from one to eight hours in all wells, it is necessary to use three different plastics due to the wide range in bottom hole temperatures. In the present operating areas, the bottom hole temperatures of the wells have been found to range from 65° F. to 330° F. The property of the low, medium and high temperature plastics used to cover this range is shown in table No. 1 below.

One of the most promising recent developments of this plastic has been its use for sealing formations in cable tool drilling wells. In many cable tool drilling areas, water sands often are encountered which produce such large volumes of water that normal drilling operations cannot continue. In many cases it is more economical to seal off the water with plastic rather than run another string of pipe. In addition to this, it is sometimes not desirable or possible to reduce the hole size necessitated by running a new string of casing. The method usually used in sealing off the water sand or undesirable formations is essentially the same as that used in other plastic jobs.

The plastic is usually placed in the well by means of a special dump

(Continued on page 18)

PROPERTIES OF THE PLASTICS

Table No. 1

Dowell Plastic	Color	Use in Well with B.H.T. Range	Range in Setting Time	Specific Gravity	Viscosity Centi-poises at 82° F.	Solubility in Brine, Oil, Water, Gas, Acid
Low Tem-perature	Reddish Purple Liquid	65° to 145° F.	1 to 4	1.205 (10 lbs.)	125	None
Medium Tem-perature	Purple to Brownish Liquid	145° to 200° F.	1 to 8	(10 lbs.)	188	None
High Tem-perature	Reddish Brown	200° to 330° F.	1 to 6	1.19 (9.9 lbs.)	850	None

The DRILLER

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Water Is Compared To Pair Of Hands

FACTS, figures, and common sense still offer the best method for selling wells and water systems. Let us quote two excerpts from a recent radio broadcast delivered by Harry E. Carloss, Deming Sales Manager, over station WGY, Schenectady, New York and see if you don't agree.

"Water has been defined as a clear, colorless liquid, which turns dark when you wash in it. This, however, covers a limited use for water, but we assure you that water, whether colorless or not, can turn to gold when piped in the proper amounts to the proper locations.

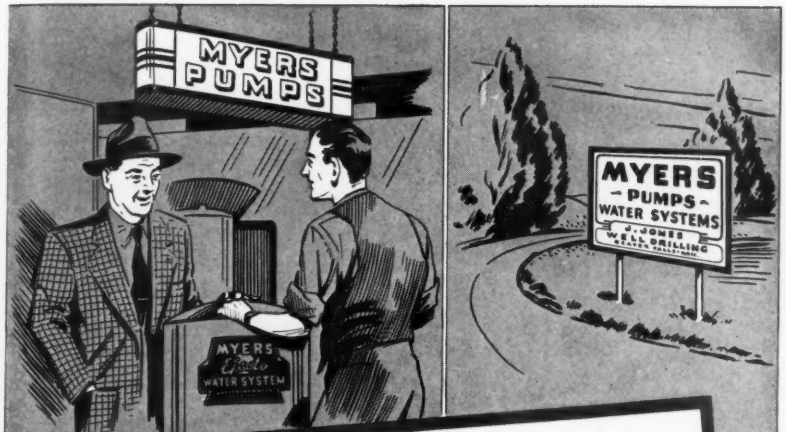
"Let me for a moment compare running water to an extra pair of hands. This extra pair of hands can bring water into your kitchen, can carry water to the bathroom, laundry, can convey water to the dairy barn, poultry and hog house, can cool milk, and last, but not least, can throw water over your fields for irrigation, or can make it available for fire protection.

"It is not difficult to figure the cost of an extra pair of hands when applied to saving in time, and increased production. A water system can do much more than just one ordinary pair of hands. A water system, when properly selected and installed and with the proper outlets, can represent many extraordinary pairs of hands.

"The initial price you pay for these extra hands will vary with the available water source, type of installation, and size of pumping units. Considering the maximum expense of all three, however, figures will prove the advisability of making the correct installation in the beginning.

"Assuming a farm rate for electricity of 3½c per kilowatt hour, your normal pumping cost in an average size family will be less than $10 per year. When you add in the many hours, and the many steps running water saves you, as well as the many dollars of increased farm production, then you will soon determine that you wouldn't want to be without a complete water system. Where could you secure the services of a better pair of hands at such a price? . . .

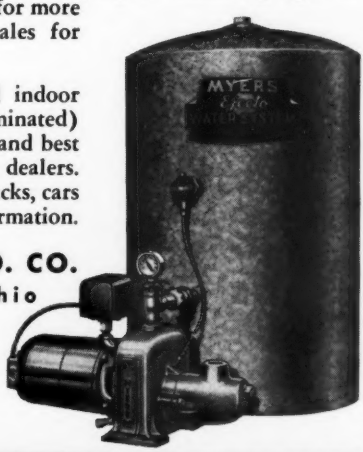
"Many times a farmer feels he cannot afford an initial investment for an electric water system to make full use of running water. Even so, a pump of proper capacity can be a start toward meeting future needs. Faucets and piping can be added from time to time."



SIGNS with many uses for MYERS DRILLER-DEALERS!

Whether you operate one drilling rig or several — whether you have a large or small showroom or none at all — Myers new Sign Program can be put to work effectively for you if you sell Myers Pumping Equipment. Here is a complete, flexible program including signs of many kinds to help you reach out for more drilling jobs and more pump sales for future business.

Colorful, durable outdoor and indoor signs (illuminated and non-illuminated) and roadway signs of the newest and best types are now available to Myers dealers. Newly designed decals, too, for trucks, cars and windows. Write for full information.



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WATER SYSTEMS • POWER AND HAND PUMPS • CYLINDERS • ACCESSORIES

NEWS OF THE MONTH

Florida Group Holds Sixth Annual Meet

THE sixth annual convention of the Florida Well Drillers Association held in Orlando on July 5, 6, and 7, was featured by the election of officers which resulted in John Hurst, Miami, being elevated from first vice-president to the position of president.

The convention was the first one held since pre-war years and drew a large attendance. Opening day was highlighted by the mayor of Orlando's welcoming speech to the drillers and the initial gathering of the drillers to commence their business sessions. Discussions centered around proposed state legislation in reference to well drilling and Tyn Cobb talked on "The Proper Way to Present a Bill to Legislature." Other speakers heard that day included David Lee and John Miller, representing the Florida State Board of Health, and various company representatives. Open house, fish-fries, hay rides, and movies provided entertainment for the evenings.

• W. A. McEllhiney, President of the Illinois Water Well Drillers Association, is shown being greeted as he arrived by plane in Orlando by Harold D. May of Tampa. McEllhiney was extended a special invitation to address the Florida wellmen.

Saturday morning saw the drillers addressed by Dr. Herman Gunter and Dr. Robert O. Vernon, Geologists for the State of Florida. They were followed by William A. McEllhiney, President of the Illinois State Water Well Drillers Association, who delivered a special talk in connection with the good and bad points regarding laws regulating well drilling. Following the afternoon talks came the election of officers.

Annual Banquet Held

The annual banquet, with Dave Gordon, Tampa, as toastmaster, was held in the evening at the Dubsdread Country Club. Concluding the convention on Sunday was an all-day boat trip up St. Johns River including a barbecue and special entertainment.

Besides the election of Hurst, who replaced Harold D. May, Tampa, as president, the other officers selected were: F. H. McBride, Tampa, first vice-president; A. O. Dunlop, Dunedin, second vice-president; Clyde Freeman, Orlando, secretary, and J.

L. Knight, Vero Beach, treasurer.

Named to the board of directors were: Immediate Past Pres. H. D. May, Tampa; Past secy. J. E. Cousins, jr., Orlando; Pat Carroll, West Palm Beach and H. C. Gardenhire, Bartow.

The newly formed Ladies Auxilary for the association elected: Mrs. Harold D. May, Orlando, president; Mrs. George Dansby, Wauchula, first vice-president; Mrs. Alvin Marquardt, Haines City, second vice-president; Mrs. Clyde Freeman, Orlando, Secretary; and Mrs. A. S. Thompson, Titusville, treasurer.

Egyptian Well

• Hagop Agopian and friends are pictured gathered around a 10-inch artesian well that produces 3000 gpm. Located in Itya-el-Baroud, Lower Egypt, on the property of the late prince Mohammed Abdel Halim, the well was put down by Hagop to a depth of 330 feet through dry clay, limestone, and coarse sand. A centrifugal pump was installed.

New Distributor For Bucyrus-Erie

WATER Engineering Company, Denver, Colorado, has been appointed distributor for water well drills in the state of Colorado by Bucyrus-Erie Company of South Milwaukee, Wisconsin. The new distributor will handle the complete line of Bucyrus-Erie water well ma-

Pump Handle Pete Says:

He's a Mighty Fine Feller, Too

I was walkin' down Main St. yestiddy when I runs inter Bill Smith — he's my JENSEN dealer — mighty fine feller, too. Always gives you a square deal and if you need spare parts — say 10 or 20 years frum now — he'll have 'em.

YOUR JENSEN dealer is just as friendly, too. Get to know him—he can tell you all about pumping units and why JENSEN'S are best. . . . . .

JENSEN

BROTHERS MFG. CO.

14th and Pacific Streets

COFFEYVILLE, KANSAS, U. S. A.

EXPORT OFFICE, 50 Church St.

New York, City

chines, which includes the 21-W, 22-W, and 24-L machines.

Organized in 1937 when it took over the assets of a water well contracting and hardware firm of over fifty years establishment, Water Engineering Company has since that time greatly expanded the scope of its business. Concentrating on wholesaling water well supplies, pumping systems, special water works and well drilling equipment, the present company has based its policy on supporting sales by extending friendly and efficient service to all its customers.

Future plans call for a remodeling of the present office and warehouse, located at 1449 South Broadway, Denver, in order to utilize their space more advantageously.

• Officers and staff of the Water Engineering Company are shown standing in front of their offices and warehouse located in Denver, Colo.

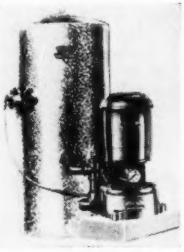
New Fountain Pump

A NEW sanitary "drinking fountain pump" recently announced by Baker Mfg. Co., Evansville, Wis., provides safer drinking for areas outside the reach of public water systems.

This new fountain, built on a modified hand pump, operates from any well or similar source of water supply. No pressure system is necessary. A few strokes of the pump handle builds up sufficient pressure to provide a satisfying drink.

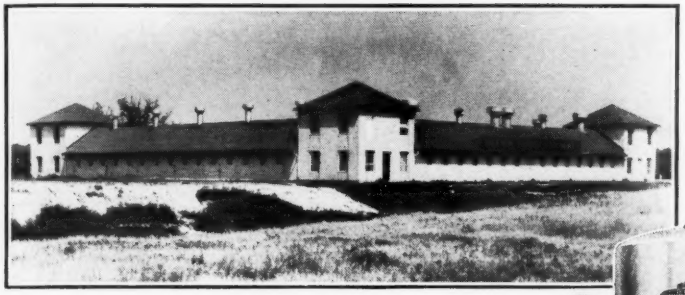
New Ejector Type Pump On Market

A NEW ejector type pump called the "Duro-Jet" has recently been announced by the Duro Company, Dayton 1, Ohio in a news release that called attention to the fact that this new type pump can be installed in the house basement away from the well on deep well settings.

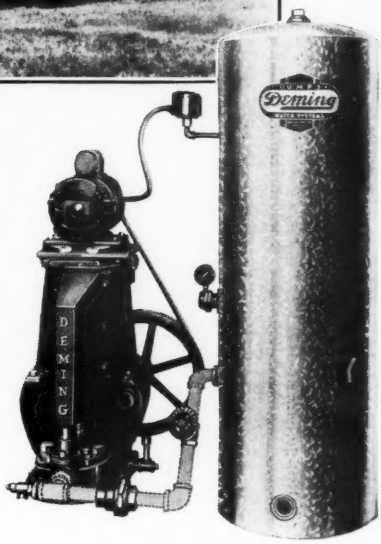


According to the release, the mechanical features include: ball bearing-Vertical design motor, new type carbon faced seal, one piece steel shaft, all bronze impeller, and newly designed ejectors. Systems include automatic air volume control and tanks are heavy steel galvanized both inside and outside.

More technical data and additional sales information can be obtained by writing direct to the manufacturers.



MORE PROOF OF DEMING PUMP PERFORMANCE



Several years ago, a Deming Figure 1062 "Oil-Rite" Deep Well Pump was installed at the Keener Farms Hatcheries near Ellsworth, Ohio. The pump supplies water from a 150 foot well to 12 flow-type automatic fountains on the range and to 8 other points of discharge in the buildings.

The Manager of Keener Farms Hatcheries emphasized the vital importance of having a dependable supply of running water at all times and stated that the Deming "Oil-Rite" has continued to meet that demand with practically no repairs or replacements in the several years it has been installed.

Figure 1062 "Oil-Rite" is designed for heavy duty, deep well service with only six moving parts of durable construction to assure dependable operation and long life.

A 42-gallon tank is standard equipment with the smaller capacity systems and a 120-gallon tank is furnished with the larger systems. Capacities of Deming Figure 1062 "Oil-Rite" Pumps are from 190 to 3635 gallons per hour.

Write for complete details about this thoroughly dependable Deming Pump that experienced well drillers know is unsurpassed for performance.

DEMING

THE COMPLETE LINE

PUMPS AND WATER SYSTEMS

THE DEMING CO. · SALEM, OHIO

Water Tables Vary Slightly

THERE were no large fluctuations in the water tables over the country in comparison to the preceding month according to the U. S. Geological Survey Water Resources Review for the month of June.

Water tables in the New England states were down slightly below May's tabulated levels but there were no appreciable drops recorded. The remainder of the Eastern Seaboard states posted test well observation reports that tallied about the same as the month before though Florida wells indicated a very small drop in the water levels.

In the Mid-west water tables remained constant as did those in the heavily-pumped irrigation wells in the Southwest and Southern California which failed to gain and continued in the low brackets. Other major items of interest to water users were the continued high run-off in the East and South, local floods in Iowa, Wisconsin, and Wyoming and the long-continued drought in the Southwest.

Recognized leaders in the pump industry for over 31 years . . . Duro products are better than ever. You can enjoy greater profits with the quality Duro line.
WRITE TODAY FOR COMPLETE INFORMATION

DURO PUMPS, SOFTENERS & WATER SYSTEMS
The DURO Company, Dayton 1, O.

Golden Gate . . .

(Continued from page 7)

with pipe casing installed, as a fair 10 hours work in sand or gravel. From 60 to 70 feet can be done on the other side of San Francisco Bay, where clay and shale are found. Wells in sand run about $5 per foot for the drilling, and $3.50 a foot for the casing. In the rich agricultural Santa Clara Valley, farmers furnish their own casing and Pitcher's men install it as a part of the drilling cost. The farmers pay $2.50 per foot for the first 100 feet of 12 to 16-inch well, with a 50 cent increase every 50 feet thereafter. Jobs too shallow for Pitcher to take economically are referred to his competitors, of all people, and they in turn give Pitcher tips on jobs their rigs are not powerful enough to handle.

Among unusual Pitcher jobs were an 1100-ft. oil well tailing-in job handled with the 22-T and a test-hole operation on a steep slope necessitating the use of one of his machine's guy wires as hold-back lines.

Has Casing Problem

Good casing is quite a problem these days, but Pitcher manages to get some of it. He uses a finely slotted casing, with many of these perforations each foot, in the San Francisco sand. Known as "stovepipe casing," it has great strength and permits about 150 gpm. of water to enter each joint of pipe. It requires very little maintenance, and if filled with

Takin' It Easy

• Solid tools and solid comfort are combined here by Ben Dake as he takes things easy while his Bucyrus-Erie 21-W puts down a well four miles from Mountain Grove, Mo., Ben's home.

gravel for the first 50 feet will give many years of trouble-free service, according to Pitcher. Where these casings tend to plug, Pitcher drills a two-inch hole in the center, blows all the obstructing mud out with compressed air, refills the well with gravel and re-installs the pump. In bad sand he cuts extra slots with a Mills perforator to draw out the mud around the bottom of the casing.

Business for Pitcher has been good, and promises to get better. His machines working around San Francisco, with their look of permanence, give prospective customers just the assurance they need to place order after order.

A wind governor on the Monitor Windwill controls wheel speed like a rider controls a horse with the bridle. When wind at storm velocity exerts extra pressure against the wheel, the wind governor automatically tightens the brake, preventing "runaway" wheel speed. As wind pressure decreases, the wind governor releases the brake, letting the wheel turn freely.

A Monitor Windmill maintains constant pumping speed in varying wind velocities. So sensitive is the Monitor head that it pulls the pump steadily in a leaf-stirring breeze, yet is safe in a storm.

A Monitor Windwill offers the advantage your customers want. Write your nearest Baker branch.

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For PEAK PERFORMANCE, use...

Profitable shallow well and blast hole drilling calls for Macwhyte "Hi-Lastic," the wire line that makes it possible to carry tools higher, for a longer stroke to drill more holes faster. "Hi-Lastic" keeps the bit turning better on all types of formation . . . helps reduce tendency for the hole to get out of round, and for the bit to channel. Internally lubricated for long life. No manila cracker needed.

For deep wells use Macwhyte Standard Cable-Tool Lines. Just the right elasticity to strike long, hard sharp blows.

For fast bailing, try Macwhyte Sand Lines. Coarse laid (6 x 7) or soft laid (6 x 19), mild plow steel.

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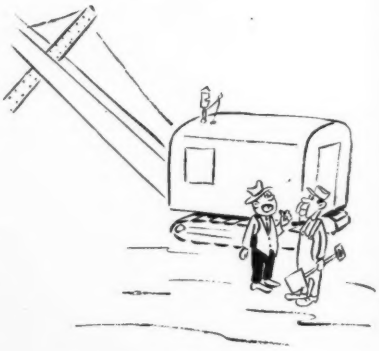

"So I told him, 'Well, what do you expect? You said you wanted a well 'DUG'!"

Plastics . . .

(Continued from page 9)

bailer. The various sized bailers available for this work hold from three to ten gallons of plastic depending upon the outside diameter of the bailer tube. They are all equipped with a special bottom valve which is connected to a small diameter tail pipe in such a way that the valve is open when the bailer is set on the bottom. The plastic is forced out of the bailer through the tail pipe by means of a piston which travels the full length of the bailer and locks upon completion of the stroke. The bailer is run in the well on a wire line which is operated from a winch on the service company's truck. These lines are equipped with a special weight indicator and measure meter to insure accurate placement of the plastic.

As illustrated in Figure 2, it has been found best to drill the hole

Pool	State	Formation Sealed Off	Feet Sealed	B.H.T. °F.	Gallons of Plastic Used	Condition Before Plastic Was Used	Condition After Plastic Was Drilled Out
Novice	Texas	Strawn Sand	26	140	67	Hole Full Water	100% Shut Off
Novice	Texas	Strawn Sand	43	140	70	Hole Full Water	100% Shut Off
Peek	Texas	Caddo Lime	23	154	210	Highly Permeable Zone	100% Sealed Off
Novice	Texas	Strawn Sand	90	140	90	Hole Full Water	Hole Full Water
Wildcat	Texas	Sand	16	160	60	Hole Full Water	70% Shut Off
Breckenridge	Texas	Caddo Lime	14	130	50	Bail 200 B.W.P.D.	90% Shut Off
Wildcat	Texas	Marble Falls	49	173	268	Hole Full Water	100% Shut Off
Oldan	Texas	Sand	25	70	140	Excessive Gas	100% Shut Off
Bryson	Texas	Marble Falls	74	172	94	Hole Full Water	Hole Full Water
Maljamar	New Mexico	Lime	11	90	30	100% Water	100% Shut Off
Page	Texas	Shale	64	148	184	Caving Shale Zone	Stopped Caving
Uniontown	Kentucky	Cypress Sand	35	93	51	Permeable Thief Sand	100% Shut Off

Table No. 2

a few feet below the bottom of the water sand to insure a complete coverage with plastic. The well should be cleaned out and the fluid in the well allowed to reach its static level before placing the plastic. This cleaning out insures uniform penetration of the pastic and eliminates excessive contamination which is detrimental to the quality of the set plastic. In the majority of cases, immediately after placing the plastic, the differential pressure across the plastic is increased by adding either oil or water to the well or a few hundred pounds surface pump pressure is used. The depth of penetration can be controlled by adjusting the pressure or by the use of finely divided solids in the plastic.

Well Is Cleaned

In extremely permeable or cavernous formations, powdered material is added to the plastic so that it will filter out on the formation and form a filter cake, thus cutting down on the penetration of the plastic into the formation. The height which the plastic fills up in the bore hole is determined by means of a steel measuring line after a sufficient time has elapsed for the plastic to harden. If the first volume does not fill up high enough to cover the zone to be sealed, due to well bore distortion or excessive loss into the formation the above procedure is repeated until the desired fill-up is obtained. The plastic now can be drilled out with tools and the well completed in the usual manner.

The plastic as it sets in the well is not as hard as most consolidated formations and will drill out very much like cement. In drilling out the cement, however, particularly through long sections, great care

(Continued on page 21)

ARMY
NAVY
OFFER REAL SATISFACTION with
"PUMPS by Aurora"
AURORA DEEP WELL TURBINES
are available in sizes of 4" to 24" for every pumping condition—oil or water lubricated. Streamline designed for highest efficiency and longest life.
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APCO Master-Line WATER SUPPLY SYSTEMS
Here is the "Best Buy" in water systems for farm and home. Turbine-Type, Simple, Compact, Silent. Life-Time service of generous, low cost water supply. Fully Guaranteed.
for SHALLOW WELLS
We also make all Kinds of Centrifugal Pumps and Jet Pumps
Write for Descriptions
AURORA Always PUMPS
AURORA PUMP COMPANY
58 Loucks St., Aurora, Illinois

WIT BITS

Customer: "I'd like some rat poison, please."
Clerk: "Will you take it with you?"
Customer: "No, I'll send the rats over after it."

"Look here, waiter! This is supposed to be oyster stew, and I haven't found a single oyster in it!"
"Sir, if you had Irish stew, would you expect to find an Irishman in it?"

Instructor: "What is a maneuver?"
Student: "Something you put on the ground to make it rich."

A young American-born boy of an immigrant family informed his teacher one day, "If my father tries to whip me again, I'll run away."
"But, Tony," objected the teacher, "your father has the right to punish you if you are bad." The boy threw back his head proudly. "I'm a citizen of the United States," he declared, "an' no darn foreigner's gonna lick me, you bet."

He (at the movies): "Can you see all right?"
She: "Yes."
He: "Is there a draft on you?"
She: "No."
He: "Is your seat comfortable?"
She: "Yes."
He: "Will you change places with me?"

"Your cough is much improved this morning," said the cheerful doctor.
"I'll take the credit," the irate patient replied. "I've been practicing all night."

A Scotchman, not feeling so well, called on his doctor, who looked him over and gave him some pills to be taken at bed time. Whiskey was also prescribed for his stomach, a small glassful to be taken after each meal. Four days later he again called on his doctor, stating he was feeling no better. "Have you taken the medicines exactly as I prescribed?" inquired the doctor.
"Weel, doctor," replied the patient, "I may be a wee bit behint wi' the pills, but I am six weeks ahead wi' the whiskey."

"Why is Jones pacing up and down in front of his house like that?"
"He's awfully worried about his wife, poor chap."
"Why, what's she got?"
"The car."

Customs Officer to tourist, "I thought you said there were only clothes in this valise?" holding up a bottle of Scotch.
"Sure," was the reply. "That's my night cap."

Young man: "Father, I've a notion to settle down and start raising chickens."
Father: "Better try owls. The hours will suit you better."

Patient: "Why stick me in the room with that crazy guy?"
Doctor: "The hospital is very crowded. Is he troublesome?"
Patient: "I'll say. Just keeps looking around saying, 'No lions, no tigers, no elephants — and all the time the room is full of them.' "

Plastics . . .

(Continued from page 19)

must be taken to prevent side tracking and drilling out into the formation. This hazard is greatly minimized when plastic is used since the pores in the formation around the well bore are usually sealed to a depth of several inches.

Data Shows Results

The data found in the table No. 2 shows only the results of this work to date on new drilling wells. This does not take into account over one hundred similar jobs done on old producing wells where the plastic was placed in the upper part of the producing formations and then drilled out with light rotary, cable tool or a chisel nose hydrostatic bailer. The sealing of the upper part of the formation with plastic was done to shut off top or intermediate water or to seal off the gas zone in wells troubled with high gas-oil ratio. In addition to the results shown for sealing off water producing formations, there is also shown in the table the results of consolidating a very badly caving shale zone. In this particular well it was found impossible to drill through the zone before it was consolidated with plastic.

Acid Confined

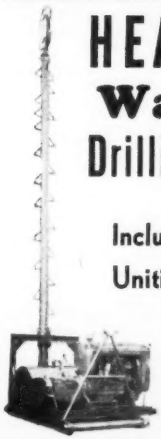
The plastic treatment on the well in the Peek pool was done so that when the well was acidized, the acid would not be lost in the upper permeable barren zone. The reason for making the plastic treatments on the well in the Uniontown Pool was to seal off the upper productive Cypress sand so that the well could be completed as a water disposal well in the lower part of the sand. This was a very successful operation as shown by water injection tests after drilling through the sealed area.

New Model Air Compressor

DRILLERS who use air-compressors for their work in surging wells will be interested in the following news released by Davey Compressor Co., Kent, Ohio, stating that they have begun production of their first 1947 model.

Known as the 315-W (gas) and 315-WD (diesel), the new machine produces 315 cubic feet of free air per minute at 100 lbs. pressure. It is available in standard skid, steel wheel trailer, and pneumatic-tired mounting styles, and flanged wheel types for railroad work. On trailers, spring mounting is included without extra cost.

The compressor unit represents a radically new departure in Davey design. It consists of two "W" banks of three cylinders each.



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BARGAIN COUNTER

To the reader who wishes to advertise used equipment in "Bargain Counter" Section.

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: 30c per line. Minimum charge $1.20. No discounts; no commissions. Read these instructions carefully. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Count your own copy to save delay. Holding up your advertisement one month to secure approval of revised copy or an additional remittance, may cost you real money in a lost sale. Be sure to enclose the correct amount of money with your order. Closing date — 10th of preceding month. Example — January issue closes December 10th.

To the reader wishing to answer "Bargain Counter" Section advertisements appearing on these pages:

Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of THE DRILLER, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

DRILLS FOR SALE

Keystone 5½ mounted on Continental truck. 40 ft. wire line derrick. 22 ft. 4½ in. stem. All in A-1 shape. Can be seen in operation. Located central Missouri. Price complete $3000 cash. Box 139

Star No. 17 spudder, completely rebuilt, new motor. Complete set 5-5/8" tools. 4 wheel pneumatic tires, trailer mounted. A-1 condition and may be seen in operation. Price $2500. Call 3-2502 or write Cyphers Drilling Co., Pulaski, Va.

Spudder, new wood frame, wood A sliding mast. Mounted on International truck, 600 feet capacity. Spring shock absorber, tools for 6 and 8 in. holes. Rig and truck in No. 1 shape. Price $1350 cash. James Hawkins, R. R. No. 1, Owensboro, Ky.

All steel cable tool, wire line spudder, new. 40 ft. derrick, semi-trailer, 6 and 8" tools. Rig tools and '35 Chevrolet truck $3500. Immediate delivery. Edw. Feyh, 3219 Bellefontaine, Kansas City 3, Mo.

5½ Keystone drilling rig, complete with three strings of tools, all hand tools, extra equipment, priced to sell. 4½ Keystone, no tools. Mrs. Craig Ramsey, Erie, Kans.

Star 21 spudder, wire line shock absorber, equipped for 6 & 8 inch holes. Plenty of good wire lines. Mounted on rubber. 43 ft. mast & plenty of tools. Machine & tools in good shape. For sale on account of sickness. Price, complete, $1750 cash. Located near Detroit. Frank W. Potts, 20215 Middlebelt, Framington, Mich.

HELP WANTED

Experienced drillers for eastern U. S. Fully competent. Any size work. Write giving qualifications, experience, names of employers, etc. Box 133

Competent drillers to operate water well drills. Steady work year around. Mostly six inch farm and suburban wells. Percentage and day. Good men are making $100 to $150 weekly, at 75c per ft. P. O. Box 181, Delafield, Wis.

WANTED

Bucyrus-Erie 21-W or 22-W, Keystone 50 or Star 71, on truck or skids. Must be in good condition. Write W. B. Hilton, Barnesville, Maryland.

Bucyrus-Erie 22-W. Armstrong 33, Keystone 50 or all steel rig equal or larger. With or without tools. R. L. Chitty, 513 S. Elmwood, Aurora, Ill.

Wanted: Bucyrus - Erie rigs 22-W, 33-W, 24-W or what have you. Cash in full. R. A. Sparks, R. R. 2, Tendley Pk., Ill.

TRADE

Will trade Bucyrus-Erie 29-W type EB drill with fifth wheel attachment for Bucyrus-Erie 22-W, 24-W or 24-L drill truck or trailer mounted. Machine in first-class condition. Box 138

MISC. FOR SALE

35 tons of brand new never used solid drilling tools and equipment for sale at factory prices, all with 2 x 3 API joints. Send for complete list. F. N. Hagmann, Jr., Vienna, Va.

The Bargain Counter Can Help You In Buying and Selling Used Rigs

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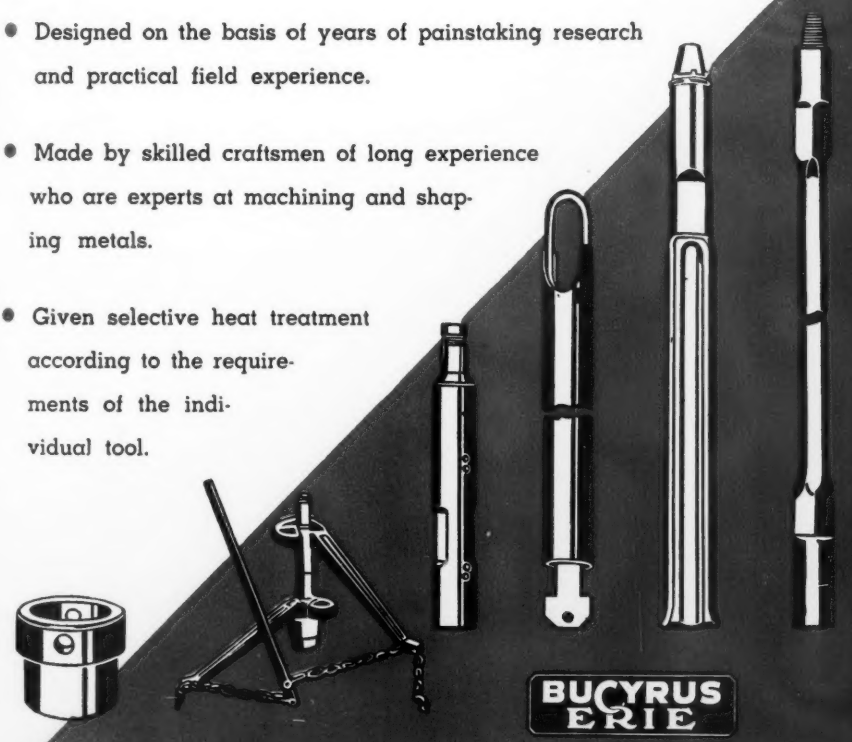
Bucyrus-Erie drilling and fishing tools give you more efficient, more economical service because they are —

- Made of carefully selected long-wearing steels tested in our modern metallurgical laboratory.
- Designed on the basis of years of painstaking research and practical field experience.
- Made by skilled craftsmen of long experience who are experts at machining and shaping metals.
- Given selective heat treatment according to the requirements of the individual tool.



Send for tool catalog and price list and the next time you need drill bits, drilling and fishing jars, bailers, rope sockets, or other tools — try Bucyrus-Erie.

5A48C

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

FOR MONTH OF

September 1946

Golden Gate Driller — Water Well Wizard 4

"On land or sea or foam" can aptly be applied to successful John N. Pitcher, San Francisco area well driller, who mounted his rigs on barges and despite the heavy swells and rough water of the bay put down 9,000 linear feet of six-inch hole in five weeks.

Plastics and Cable Tool Drilling 8

Originally written for the oil field where water encountered in oil wells is walled off, this article on the use of plastics in cable tool drilling should prove interesting to all water well drillers.

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Water is compared to pair of hands.

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Florida Convention report, New Equipment Distributor, New Pump Release, Water Table Report.

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